Claims:

1. A multi-axis imaging device comprising:

a plurality of imaging systems disposed along a corresponding plurality of optical axes for imaging an object;

an optical relay system positioned across said plurality of optical axes such that an image of said object is relayed through the relay system; and

a light source illuminating the object to produce said image of the object.

2. The device of Claim 1, wherein said optical relay system is positioned between said plurality of imaging systems and a detector.

3. The device of Claim 1, wherein said plurality of imaging systems includes multiple parallel optical components, each component containing a plurality of individual optical elements corresponding to said plurality of optical axes.

4. The device of Claim 3, wherein said optical relay system is positioned between a pair of said multiple parallel optical components.

5. The device of Claim 1, wherein said light source illuminates the object through said optical relay system.

6. The device of Claim 5, further including a second light source for trans-illumination of the object from a side opposite to said plurality of imaging systems.

7. The device of Claim 2, wherein said light source illuminates the object through said optical relay systems and further including a second light source for trans-illumination of the object from a side opposite to said plurality of imaging systems.

8. The device of Claim 1, further comprising a means for modifying a property of an imaging wavefront received from said plurality of imaging systems.

9. The device of Claim 8, wherein said modifying means includes an element for modifying a phase of said imaging wavefront.

10. The device of Claim 8, wherein said modifying means includes an element for modifying an amplitude of said imaging wavefront.

11. The device of Claim 8, wherein said modifying means includes a cubic phase plate.

12. The device of Claim 8, wherein said modifying means includes a polarizing element.

13. The device of Claim 8, wherein said modifying means includes a differential interference contrast element.

14. The device of Claim 8, wherein said modifying means includes a means for producing targeted obscurations at a plane conjugate to an aperture stop of the device.

15. The device of Claim 8, wherein said modifying means includes an adjustable phase plate.

16. The device of Claim 1, further comprising a means for modifying a property of an illumination wavefront received from said light source.

17. The device of Claim 16, wherein said modifying means includes an element for modifying a phase of said illumination wavefront.

18. The device of Claim 16, wherein said modifying means includes an element for modifying an amplitude of said illumination wavefront.

19. The device of Claim 16, wherein said modifying means includes a polarizing element.

20. The device of Claim 1, wherein said optical relay system includes a pair of optical elements and a beam splitter, wherein the beam splitter is adapted to reflect at least a portion of an illumination wavefront toward the object and to transmit at least portion of an imaging wavefront toward the detector.

21. The device of Claim 20, wherein said beam splitter is a polarizing beam splitter and further including a linear polarizer across said illumination wavefront and a circular polarizer across said imaging wavefront.

22. The device of Claim 1, wherein said optical relay system has a magnification of magnitude one.

23. The device of Claim 1, wherein said plurality of imaging systems is telecentric.

24. A method for providing epi-illumination to a multi-axis imaging device, comprising the following steps:

arranging a plurality of imaging systems disposed along a corresponding plurality of optical axes for imaging an object;

positioning an optical relay system across said plurality of optical axes such that an image of the object is relayed through the relay system; and

illuminating the object to produce said image of the object.

25. The method of Claim 25, wherein said optical relay system is positioned between said plurality of imaging systems and a detector.

26. The method of Claim 24, wherein said plurality of imaging systems includes multiple parallel optical components, each component containing a plurality of individual optical elements corresponding to said plurality of optical axes.

27. The method of Claim 26, wherein said optical relay system is positioned between a pair of said multiple parallel optical components.

28. The method of Claim 24, wherein said illuminating step is carried out through said optical relay system.

29. The method of Claim 28, further including the step of trans-illuminating the object from a side opposite to said plurality of imaging systems.

30. The method of Claim 25, wherein said illuminating step is carried out through said optical relay system and further including the step of trans-illuminating the object from a side opposite to said plurality of imaging systems.

31. The method of Claim 24, further comprising the step of modifying a property of an imaging wavefront received from said plurality of imaging systems.

32. The method of Claim 31, wherein said modifying step is carried out with an element for modifying a phase of said imaging wavefront.

33. The method of Claim 31, wherein said modifying step is carried out with an element for modifying an amplitude of said imaging wavefront.

34. The method of Claim 31, wherein said modifying step is carried out with a cubic phase plate.

35. The method of Claim 31, wherein said modifying step is carried out with a polarizing element.

36. The method of Claim 31, wherein said modifying step is carried out with a differential interference contrast element.

37. The method of Claim 31, wherein said modifying step is carried out with a means for producing targeted obscurations at a plane substantially conjugate to an aperture stop of the device.

38. The method of Claim 31, wherein said modifying step is carried out with an adjustable phase plate.

39. The method of Claim 24, further comprising the step of modifying a property of an illumination wavefront produced in said illuminating step.

40. The method of Claim 39, wherein said modifying step is carried out with a phase contrast plate.

41. The method of Claim 39, wherein said modifying step is carried out with a modulation contrast plate.

42. The method of Claim 39, wherein said modifying step is carried out with a polarizing element.

43. The method of Claim 24, wherein said optical relay system includes a pair of optical elements and a beam splitter, and wherein the beam splitter is adapted to reflect at least a portion of an illumination wavefront toward the object and to transmit at least a portion of an imaging wavefront toward the detector.

44. The method of Claim 43, wherein said beam splitter is a polarizing beam splitter and further including the step of placing a linear polarizer across said illumination wavefront and a circular polarizer across said imaging wavefront.

45. The method of Claim 24, wherein said optical relay system has a magnification of magnitude one.

46. The method of Claim 24, wherein said plurality of imaging systems is telecentric.